



The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
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TO:

THROUGH:

FROM: Alfred DeMaria, Jr., M.D.
Acting Director, State Laboratory Institute

CC:

DATE:

RE: Current Circumstances of the Massachusetts Department of
Public Health, Drug Analysis Laboratory

The Drug Analysis Laboratory, located at the Massachusetts State Laboratory Institute, 305 South Street, Jamaica Plain, Massachusetts and at the University of Massachusetts, Amherst, provides forensic drug testing services to municipal police departments, District Attorneys and federal law enforcement (see description that follows). The increased demand on the laboratory for testing more drugs for evidentiary purposes, related to increased volume of cases and changes in sentencing, coupled with resource limitations, lack of space and unavoidable decreases in staffing related to staff turnover and key staff on medical leave, have outstripped the capacity of the laboratory to meet demand for testing in a safe and effective manner. This has led to a need for a moratorium on testing until the substantial backlog in testing can be addressed, and staffing and space can be restored to sufficiency. The attached letter has been drafted to apprise the submitters of the moratorium. Without this moratorium, the backlog will become unaddressable and the laboratory will run out of secure space to store drug evidence, threatening the prosecution of cases and the safe operation of the laboratory. The Department of Public Health has done everything within its power, including changing testing procedures and seconding staff to the Drug Analysis Laboratory, but this has only delayed the crisis, not solved it. The laboratory receives no funding beyond what can be provided through the State Laboratory Account (#4512-1000), which funds the general operation of all the public health laboratories, tuberculosis control (including clinics and medications), as well as the majority of the staff of the Bureau of Laboratory Sciences.

BACKGROUND

The Department of Public Health, Drug Analysis Laboratory is the largest controlled substance analytical laboratory in the Commonwealth of Massachusetts. It is comprised of two regional laboratories. The Jamaica Plain site serves the cities and towns of eastern Massachusetts, and the Amherst laboratory, located in the Western Mass Health Center on the campus of the University of Massachusetts, serves the cities and towns west of Worcester County. Together the laboratories analyze approximately 70-75 % of all controlled substances submissions in the Commonwealth. These analyses are used in the prosecution of violations of the Massachusetts Controlled Substance Law, MGL Chapter 94C. Our chemists serve, and provide testimony for, the District, Superior, and Federal Court systems of Massachusetts. The laboratory also provides chemical analysis of suspected tampering samples submitted by the DPH Drug Control Program.

Drug analysis for cities and towns was mandated to be done by the Department of Public Health's Division of Food and Drugs (now Drug Control Program) by statute. All drug submissions in the Commonwealth were analyzed by the Division of Food and Drug until 1969. The Dept of Public Safety began analyzing all State Police samples at that time. In 1981, the Food and Drug Laboratory was incorporated into the State Laboratory Institute. Worcester County opened up a drug testing laboratory at the UMass Medical School circa 1987, and they test all of the drug submissions in Worcester County. Presently, the DPH Amherst and Boston Laboratories analyze drug submissions for all the cities and towns of the Commonwealth, excluding those in Worcester County. The public health laboratories analyze approximately 70-75 % of all drug submissions in the Commonwealth. In 1988 the legislature set up the Drug Analysis Fund, to help with the increasing costs of operating the laboratory. A portion of all fines levied in criminal drug cases was deposited by the courts into this fund. By statute, the DPH Laboratory was able to spend \$100,000 per year for equipment and supplies. This Fund was eliminated in 2003 by legislative action. The laboratory analyzed 43,092 drug items in 2006, an increase of 29% since 1995. The laboratory staffing level has remained at 1995 levels.

The Drug Analysis Laboratory

1) PERSONNEL 20 Employees

Jamaica Plain (15)

1 Laboratory Supervisor
11.5 (FTE) Analysts
2 Evidence Office Staff

Amherst (5)

1 Laboratory Supervisor
4.0 (FTE) Analysts
Evidence Staff, 0, Chemist perform duty

2) WORKLOAD

TYPES of SAMPLES ANALYZED

The laboratories analyze confiscated items (samples) submitted by the various local police departments of the Commonwealth that are believed to be violations of the Controlled Substances Laws. These items may include the following:

- A) Unknown Powders and Substances such as Cocaine, Crack, Heroin, Methamphetamine, Ketamine, LSD and Hashish.
- B) Vegetable Matter such as Marijuana, Phencyclidine(PCP), and Psilocybin Mushrooms.
- C) Diverted pharmaceuticals from legitimate sources, such as Oxycontin and Hydrocodone, and clandestinely manufactured drugs such as MDA and MDMA
- D) Steroids and designer drugs such as (GHB), which have recently appeared on the drug scene.
- E) The contents of needles and syringes, and the residues on cooker caps, straws, balances, smoking pipes, and other paraphernalia, involved in illicit drug use.
- F) Suspected tampering samples submitted by the DPH Division of Food and Drug
- G) Samples submitted by the Department's BT/CT laboratories for possible illicit drugs

DEFINITION of SAMPLE vs CASE

A "SAMPLE" (item) may be 1 small bag of vegetable matter in a bag and may take 15-20 minutes to analyze. A sample may also be 1,000 glassine bags containing an unknown powder. This is still one sample. In this instance a representative number of bags (usually at least the square root of the total) would be tested, and the results extrapolated for the entire group. This one sample may take 1-2 days for a chemist to complete analysis.

A "CASE" contains all the samples (items) submitted at one time for the same defendant. A Case may contain several items such as A) powder in a plastic bag, B) vegetable matter in three plastic bags, and C) twenty tablets in a glass vial. This would be one Case with 3 samples (items), and items B and C have 3 and 20 specimens respectively.

DATA (Amherst and Boston)	2004	2005	2006
Samples Submitted	38,942	40,480	43,092 *
Cases Submitted	(24,339)	(25,300)	(26,993)
Samples Analyzed	42,012	38,637	40,220
Cases Analyzed	(26,257)	(24,148)	(25,138)

* 2006 saw a 6 % increase in sample submissions over 2005. Since 1995, submissions to the laboratory have risen 29 %, from 33,430 to the present level of 43,092.

Turnaround Time (TAT)- amount of time from when a sample is submitted to the laboratory until the chemist completes testing of it.

Average Turnaround Time- the average amount of time from submission to completion of all samples by the laboratory.

Average TAT for 200430.16 days

Average TAT for 2005.....22.66 days

REPORTS

Each month the Drug Analysis Laboratory provides a report on the number of samples submitted to the laboratory, the number and type of samples analyzed, and the current backlog of samples awaiting analysis. This monthly report is sent to the Attorney General's Office, the Undersecretary of Forensic Science, and to all judges hearing drug cases in the Commonwealth. See ample report at: http://www.mass.gov/dph/bls/monthly_drug_report.pdf.

TYPES of ANALYSES PERFORMED

Items analyzed by the laboratory are used as evidence in criminal proceedings. Any testing and handling of a sample by the laboratory is documented. Analytical data generated by the laboratory is maintained for a minimum of fifteen years. Chemists are often required to testify in court about their findings, and any work done by the laboratory is open to a defense challenge

The following tests are done routinely by the laboratory

1) Preliminary or screening tests

- a) Color tests
- b) Microcrystal tests
- c) Ballistic (identifying markings of tablets)
- d) Thin Layer Chromatography
- e) Instrumental ...HPLC, Gas Chromatography(GC) or Ultraviolet(UV) Spectroscopy

2) Confirmatory Tests

- a) GC/Mass Spectroscopy
- b) Infrared Spectroscopy

3) Quantitative Determinations

- a) Net weights are determined on all powder type samples
- b) Percent concentration of controlled substance by GC and UV

MAJOR LABORATORY EQUIPMENT

Jamaica Plain

4 Automated GC/Mass Specs
5 Automated Gas Chromatographs
2 Infrared Spectrometers
1 High Pressure Liquid Chromatograph (HPLC)
1 Ultraviolet Spectrophotometer
16-20 Microscopes
25 Analytical Balances

Amherst

2 Automated GC/Mass Specs
3 Automated Gas Chromatographs
na
na
na
8 Microscopes
10 Analytical Balances

The costs of balances range from \$800-\$2,000, while GC/MS systems run \$ 85,000-\$120,000. The total value of analytical instrumentation in the laboratories is over \$3,000,000.

ISSUES FACING the LABORATORY

- 1) Increased demand for analysis and back-log
- 2) Training opportunities for chemists
- 3) Updating of analytical equipment
- 4) Certification
- 5) Staffing issues
- 6) Space concerns at the Amherst Laboratory
- 7) Ventilation problems at each laboratory

Drug Analysis for the Commonwealth's cities and towns was mandated by statute, to be done by the Dept. of Public Health's Division of Food and Drugs (Chapter 111 of the General Laws). All drug submissions in the Commonwealth were done by the Division of Food and Drug until 1969. The Dept of Public Safety began analyzing all State Police samples at this time. In 1981, the Food and Drug Laboratory was incorporated into the State Laboratory Institute. Worcester County opened up a drug testing laboratory at the UMass Medical School circa 1987, and they test all of the drug submissions in Worcester County. Presently, the DPH Amherst and Boston Laboratories analyze drug submissions for all the cities and towns of the Commonwealth, excluding those in Worcester. The Public Health Laboratories analyze approximately 70-75 % of all drug submissions in the Commonwealth. In 1988 the legislature set up the Drug Analysis Fund, to help with the increasing costs of operating the laboratory. A portion of all fines levied in criminal drug cases was deposited by the courts into this fund. By statute, the DPH Laboratory was able to spend \$100,000 per year for equipment and supplies. This Fund was eliminated in 2003, by the Legislature, due to the Commonwealth's budget crisis. The Laboratory analyzed 43,092 drug items in 2006, an increase of 29% since 1995. The Laboratory staffing level has remained at 1995 levels.

ISSUES FACING the LABORATORY

- 1) Training opportunities for Chemists
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- 5) Ventilation problems at each laboratory
- 6) Laboratory Consolidation

Training, or lack thereof, for the laboratory staff, has become one of the most serious issues facing the laboratory. The complexity of testing done by Forensic Laboratories has increased dramatically. Years ago, chemists could do a couple of color tests and a screening test, such as GC, to analyze a substance. Today, laboratories must use the most sophisticated analytical equipment available. The courts require a structural identification of most types of samples. The use of complex analytical instrumentation requires significant training. Laboratory determinations can be, and have been, challenged by hired defense chemists in court. Having staff that do not have ongoing training in the latest methods and techniques, may jeopardize the successful prosecution of a case. From the early 1980s until the mid 90s, Drug Lab chemists were sent to the Drug Enforcement Administration (DEA) training laboratory in Virginia. Here, chemists spent several days learning the latest techniques used in drug analysis, the proper handling of evidence, and how to effectively testify in court. Chemists also regularly attended training seminars and yearly Forensic Science meetings, where the latest innovations in the field are discussed. Today, unfortunately, budget reductions have precluded any Drug Lab staff member from attending these training opportunities. This situation must be rectified.

The problems with equipment, both the purchase of new and the repair of old, is the second major problem facing the laboratory. With the increasing sophistication of analytical instrumentation, upgrades are required constantly. Instruments over ten years old are outdated and will not be serviced by the manufacturers. The Drug Laboratory has several GC's and GC/MS's that are well over 10 years old and unserviceable. If these were to fail, the laboratory would not be able to conduct analyses. A budgeted program for the regular updating of major analytical equipment is essential.

The major staffing problem facing the Jamaica Plain section is in the Evidence Office. There are presently 2 staff people that must perform the every day functions of the evidence office. These tasks include, receiving all items submitted daily from the various law enforcement agencies. This is a tedious and involved process. Up to 300 samples can be submitted each day. They must weigh, describe, and produce a receipt for each sample submitted. They must also input the corresponding

information of each item, into the laboratory's computer database. The evidence staff is also responsible for assigning samples to each chemist and documenting the chain of custody. The two staff people must also respond to, and document the hundreds of preliminary requests that come in from the various courts. The two evidence staff members also must input all testing results, and log back all completed samples to the safe. Finally, they return all samples to the various police departments and document this transfer in writing. Until 2002, the evidence office was staffed with three people. However, the third person transferred out of the office and has not been replaced. In order to meet the requirement that two people be in the office at busy times, the laboratory is presently using a chemist to augment the office staff. This is disruptive to the laboratory and it is imperative that a third evidence officer be hired.

The Amherst laboratory is housed in the Western Massachusetts Public Health Center on the UMass campus. The building was built with a federal grant that stipulated that building space would be shared by the state, and by UMass public health programs. Several DPH programs located in the building moved out in the 1980's. The vacated space was given to the University. The remaining DPH space is shared by the Drug Laboratory, the Immunization Program, an Epidemiologist, DPH Nurse, and a Division of Food and Drugs Inspector. UMass provides custodial care, building maintenance, security, environmental health and safety services, utilities and waste disposal at no cost to DPH. On a number of occasions the University has asked DPH to vacate the Amherst Public Health Center. This space is actually controlled by the State Division of Capital Asset Management and Maintenance which has refused to allow UMass to take over the space without DPH cooperation. Presently, the University is proposing to supply an alternative space in another building on the edge of campus. No action on this offer has been taken by DPH at this time. UMass has not offered to bear the costs of designing and installing infrastructure needed for a new laboratory. There are also issues of guaranteeing the right to long-term occupancy of a new space should DPH decide to relinquish space it already controls.

Problems with chemical fume hoods have been a serious issue at the Amherst laboratory for several years. Projected costs for repairs or replacement range from \$ 75,000-\$ 300,000. The range is so large because the extent of infrastructure changes needed to install a new hood could not be determined without a more extensive study. At the Jamaica Plain laboratory, only two of the four chemical fume hoods are in working order. UMass officials have been notified of the safety problems that have arisen because of this situation, but this is a building wide problem and is not being addressed by the Facility people at this time.

The issue of laboratory consolidation has come up due to a report issued by the Governors Task Force on Criminal Justice. One of the recommendations of this group was to consolidate the Department of Public Health Laboratory with the State Police Laboratory. DPH did not have an official representative on this group. Several of the

problems noted by this group were unfounded. The Department, through Assistant Commissioner Timperi, rejected the recommendation of consolidation. The DPH Drug Analysis Laboratory has built an excellent working relationship with the clients it serves. Procedures for handling analyses needed by the courts on expedited basis have been implemented. The Laboratory works on a daily basis with the Courts, The Police Departments and the District Attorney's offices, to insure the best possible service that all groups demand. It would be a mistake to change this working relationship.